

# SCHMERSAL Tech Briefs:

## Electronic Safety Sensors and Locking Devices



CSS180 CSS34 CSS30S MZM100 AZ201/AZM201 RSS36 RSS260 RSS16 AZM300 AZM400

### Applications

- Material handling systems
- Chemical processing equipment
- Robot cells
- Folding or brake presses
- Filter presses
- Printing machines
- Injection molding
- Palletizers
- Packaging equipment
- Textile machines
- Stamping machines
- Metal working equipment
- Wood working
- Food processing machinery
- Pharmaceutical machinery
- Medical applications

### Overview

Pulse Echo is a Schmersal-patented non-contact microprocessor-based technology. Coded resonant frequencies oscillating from a target which are triggered from the mating sensor are evaluated to determine position of the guard. Only once the guard is closed (and locked for guard locking devices) will the dual safety outputs become enabled. Pulse Echo is integrated into the CSS sensors and MZM magnetic lock.

Schmersal RSS sensors, AZ201 interlock, AZM201 solenoid lock, AZM300 solenoid lock, and AZM400 bolt system uses enhanced Radio Frequency Identification (RFID) technology. This RFID system operates on a unique frequency, so sensors will disregard RFID signals that are not of the mating target. In addition, the passive RFID tag in the actuator target will not interfere with other RFID systems such as product trackers.

All Pulse Echo and RFID safety devices feature redundant monitoring microprocessors and dual PNP semiconductor outputs to fulfill the highest level of safety of Category 4 / PLe to ISO 13849 and SIL3 to IEC 62061. The different variants of devices can also be wired in series without detriment to this safety level.

Device status can be determined via the 3 LED's which include various faults codes for quick diagnostics, or serial diagnostics (SD) which provides detailed-device specific information. Basic conventional diagnostics via a PNP semiconductor output is offered for non-SD models.

Some available options for these non-contact, low wear and tear technologies include ECOLAB approvals and IP69K ratings for high temperature, high pressure wash down applications and dual channel locking for PLe locking to ISO 14119.

The RFID system is also difficult to bypass due to the individually coded actuator: The basic version of the sensor responds to any RST target actuator; the "I1" version only accepts the coded ID number of the specific target actuator which is taught in during the first start-up; and the "I2" version allows the teach-in process to be repeated, allowing replacement of a lost or damaged actuator. Due to this individually coding option, the I1 and I2 variants fulfill the High level coding requirements of ISO 14119.

### Series Connections



Y connectors



PFB Passive Field Box

### Available Literature



Electronic Safety Sensors and Solenoid Interlocks catalog

### Serial Diagnostic Gateways

The SD Gateways for the different field bus systems convert the serial diagnostic signal of the sensors and solenoid interlocks into the desired field bus protocol:

PROFIBUS	PROFINET IO
DeviceNet	EtherNet IP
CC-Link	CANopen

The SD Gateways are integrated as slave in the available field bus system. In this way, the diagnostic signals can be evaluated through the connected control system.



### Various Models

#### Pulse Echo Based

##### CSS180

Compact M18 diameter sensor suitable for flush mounting

##### CSS34

Rectangular safety sensor with 5 planes of actuation and option for External Device Monitoring (EDM)

##### CSS30S

IP69K - stainless steel M30 diameter sensor, suitable for hygienic or outdoor applications.

##### MZM100

Electromagnetic 500N locking with options for adjustable latching up to 100N

#### RFID Based

##### RSS36

ECOLAB approved and IP69K rated. Option for 18N latching.

##### RSS16

AZ16 style housing with optional 60N magnetic latch

##### RSS260

Compact, universal mounting sensor

##### AZ201

Keyed interlock switch with door handle actuator

##### AZM201

2000N solenoid latching interlock with door handle actuator

##### AZM300

1000N IP69K solenoid interlock. Adjustable latching of 25N or 50N

##### AZM400

10,000N bi-stable locking bolt.

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